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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,471	03/21/2005	Steven Joseph Wantling	B22-2523	4382
33349 7590 01/15/2009 HEXION SPECIALTY CHEMICALS, INC. 1600 SMITH STREET, P.O. BOX 4500 HOUSTON, TX 77210-4500				
EXAMINER				
CORDRAY, DENNIS R				
ART UNIT		PAPER NUMBER		
1791				
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01/15/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/528,471

Applicant(s)

WANTLING ET AL.

Examiner

DENNIS CORDRAY

Art Unit

1791

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 October 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2 and 4-44 is/are pending in the application.
- 4a) Of the above claim(s) 20-25 and 28-44 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4-19, 26 and 27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/08)
Paper No(s)/Mail Date 4/12/05 4/13/05
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's amendments, filed 10/29/2008, reciting a specific alkyl phenol have overcome the outstanding rejections over the cited prior art. The rejections have been withdrawn. However, upon further consideration, new grounds of rejection are made as detailed herein.

2. The provisional Double Patenting rejections over applications 10/525912 and 10/525917 have been withdrawn as the two applications have matured into U.S. Patents 7473712 and 7473713, respectively. New Double Patenting rejections are made herein.

Claim Objections

3. Claims 2 and 27 are objected to because of the following informalities:

Claim 2 recites "the alkali illetal hydroxide." It is believed that the claim should read "the alkali **metal** hydroxide."

Claim 27 recites "a complexing agent selected horn the group." It is believed that the claim should read "a complexing agent selected **from** the group."

Appropriate correction is required.

4. It is suggested that all claims be carefully reviewed for typographical or grammatic errors.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 2, 4, 12-19, 26 and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Wantling (7294189).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference (Oct. 11, 2002), it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Wantling discloses an emulsion comprising water, wax and a preservative (Abs, col 4, lines 9-12). Note that the open claim language of the instant claims allows for additional components, such as the preservative. In some embodiments, the emulsion also comprises a complexed starch, the complexing agent being a borate or molybdenum compound; a wax having a melting point from 120 °F to 165 °F; a saponifiable wax; an alkali metal hydroxide such as sodium or potassium hydroxide; a

polynaphthalenesulfonic acid; and an alkyl phenol such as a C₂₄ to C₃₆ polymerized methylene coupled alkyl phenol (col 7, lines 4-21 and 29-46; col 8, lines 4-9 and 27-34; col 9, lines 52-58). The starch can be an acid-modified starch (col 12, lines 19-32, Table 3). The saponified wax can act as a surfactant (col 7, lines 29 and 30). Other surfactants can also be used in a dual surfactant system, such as an alkoxyated fatty acid ester (col 11, lines 18-35). Compositions having the claimed amounts of additives are disclosed (col 11, line 42 to col 12, line 32).

6. Claims 5-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wantling '189 as used in the rejection of Claims 1, 2, 4, 12-19, 26 and 27 above, and further in view of Song (6010596) and Wantling (6165261).

Wantling '189 is used as above. Wantling '189 does not disclose the claimed surfactant species.

Song discloses a gypsum-wood fiber board having improved water resistance comprising an aqueous wax emulsion containing a paraffinic wax having a melting point from 40-80 °C (104-176 °F), montan wax (a saponifiable wax), a cationic surfactant or emulsifier, calcium sulfate and host particles, polyvinyl alcohol, emulsifiers, stabilizers and water. The host particles are preferably wood fibers. The montan wax is used in an amount from 1 to 200 parts per 100 parts paraffinic wax. Conventional emulsifiers used include sorbitan fatty acid esters, polyoxyethylene sorbitan fatty acid esters, and a cationic surfactant, which are employed in an amount of 0.1 to 5% by weight of the emulsion. Conventional stabilizers added include alkali metal hydroxides and are used

in an amount of 0.1 to 1% by weight of the emulsion. The polyvinyl alcohol is used in an amount from 1 to 50 parts per 100 parts paraffinic wax. Water forms 35% to 80% of the emulsion, thus the waxes, surfactants, stabilizers and polyvinylalcohol form from 20% to 65% of the emulsion (Abs; col 1, lines 4-11; col 3, lines 55-67; col 4, lines 1-8 and 20-45; col 7, lines 30-65; col 8, lines 3-22).

Wantling '261 discloses water resistant gypsum board comprising a wax emulsion containing, by weight of the emulsion, about 25% to about 50% of a slack wax generally having a melting point from 110 to 140 °F, 1-20% a microcrystalline wax, about 1 to about 10% of a naphthenic oil, about 0.5% to about 10% of an emulsifier, about 0.05% to about 5% of a dispersing agent and water. The claimed sorbitan fatty acid esters and polyoxyethylene sorbitan fatty acid esters are disclosed. In an example, sorbitan monostearate and polyoxyethylene sorbitan monostearate are each used in an amount of 2.5% by weight of the emulsion (Abs; col 1, line 48 to col 2, line 13; col 3, lines 4-8; col 4, lines 33-39; col 5, lines 14-29, Example 1).

The art of Wantling '189, Song, Wantling '261 and the instant invention is analogous as pertaining to water repellent compositions used in gypsum, gypsum-fiber, paper and fiber containing products. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the claimed surfactants in the composition of Wantling '189 and in view of Song and Wantling '261 as conventional surfactants well known in the art for such compositions.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 2, 4, 12-14 and 26 are rejected under 35 U.S.C. 103(a) as unpatentable over Imai (5120355) in view of Manka et al (7026378).

Imai discloses an emulsion comprising water, one or more waxes (a) having a melting point of 50-90 °C (122 to 194 °F), a hydrocarbon resin (b) (which is in some embodiments an alkyl polyphenol), a salt of a condensation product of β -naphthalene sulfonic acid with formalin (c) (polynaphthalenesulfonic acid), a polyacrylic acid salt (d), an alkali metal hydroxide (e), and a wax dispersant (construed by the Examiner to be a surfactant). The waxes can be a hydrocarbon wax, an oxygen containing wax such as montan or camuba (saponifiable waxes) or a mixture of the waxes (Abs; col 1, lines 45-52; col 1, line 67 to col 2, line 2; col 2, lines 31-32; col 3, line 54 to col 4, line 16; col 4, lines 60-64; col 5, lines 4-5, 22-28 and 47-51; Claim 15). Imai discloses that the naphthalene sulfonic acid-formalin condensation product functions as an emulsifying agent (acts as a surfactant) and that a mixture of two or more having different structures can be used, thus the emulsion also comprises one or more surfactants (col 4, line 60 to col 5, line 9). Note that the open claim language permits the inclusion of additional additives, such as polyacrylic acid salts.

Regarding the amounts of each component in the composition, Imai discloses the following guidelines: a weight ratio of (a) + (b) to (c) + (d) of 1:0.01-0.2; a weight ratio of (a) to (b) of 1:0.1-2; a weight ratio of (c) to (d) of 1:0.1-1; a weight ratio of (a) + (b) + (c) + (d) to (e) of 1:0.01-0.1; an amount of surfactant of 1% or less by weight of the amount of (a) thru (e); an amount of 150 pts or less of saponifiable waxes to 100 parts hydrocarbon wax; an amount of water of 0.8 to 10 times the amount of the above components (col 3, lines 47-53; col 5, lines 34-62). The guidelines embody compositions within the claimed ranges. For example, the following composition is embodied and also falls within the claimed ranges:

Component	parts by weight	% of emulsion
(a1) hydrocarbon wax	200	32.4
(a2) saponifiable wax	30	4.9
(b) alkyl polyphenol	50	8.1
(c) polynaphthalenesulfonic acid	20	3.2
(d) polyacrylic acid	10	1.6
(e) alkali hydroxide	4.5	0.7
Surfactant	3.1	0.5
<u>Water</u>	<u>300</u>	<u>48.6</u>
TOTAL	617.6	100

Imai discloses that the composition is useful as a water repellent composition for gypsum board, gypsum plaster, cements, paper and fibers (col 6, lines 12-18).

Imai does not disclose the claimed polymerized methylene coupled alkyl phenol.

Manka et al discloses adding hydrocarbyl substituted phenols to binder resins for cellulosic composites to increase the water resistance of the material. The hydrocarbyl substituted phenols impart hydrophobicity to various binder resins as well as the composites of cellulosic material and resin binder, and act as a dispersant for wax added to the compositions. The substituted phenols have hydrocarbyl groups containing from 4 to 400 carbon atoms, such as alkyl and alkenyl groups of 12 to 80 carbon atoms (col 1, lines 10-14; col 1, line 50 to col 2, line 9; col 2, lines 44-49; col 4, line 64 to col 5, line 4). In some particularly preferred embodiments, the substituted phenols are coupled by methylene groups through reaction with formaldehyde, thus overlay the claimed methylene coupled alkyl phenols (col 2, lines 2-5; col 3, lines 29-52; col 4, lines 11-63).

The art of Imai, Manka et al and the instant invention is analogous as pertaining to water repellent compositions used in gypsum, gypsum-fiber, paper and fiber containing composites. The composition of Imai has been disclosed for use with gypsum, cement and fibrous products. It would have been obvious to one of ordinary skill in the art to use the claimed methylene coupled alkyl phenol for the hydrocarbon resin in the composition of Imai in view of Manka et al to obtain the water repellent properties thereof and as a dispersant for the waxes in the composition.

8. Claims 5-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imai in view of Manka et al, as used in the rejection of Claims 1, 2, 4, 12-14 and 26 above, and further in view of Song (6010596) and Wantling (6165261).

Imai and Manka et al are used as above. Imai and Manka et al do not disclose the claimed surfactant species.

Song discloses a gypsum-wood fiber board having improved water resistance comprising an aqueous wax emulsion containing a paraffinic wax having a melting point from 40-80 °C (104-176 °F), montan wax (a saponifiable wax), a cationic surfactant or emulsifier, calcium sulfate and host particles, polyvinyl alcohol, emulsifiers, stabilizers and water. The host particles are preferably wood fibers. The montan wax is used in an amount from 1 to 200 parts per 100 parts paraffinic wax. Conventional emulsifiers used include sorbitan fatty acid esters, polyoxyethylene sorbitan fatty acid esters, and a cationic surfactant, which are employed in an amount of 0.1 to 5% by weight of the emulsion. Conventional stabilizers added include alkali metal hydroxides and are used in an amount of 0.1 to 1% by weight of the emulsion. The polyvinyl alcohol is used in an amount from 1 to 50 parts per 100 parts paraffinic wax. Water forms 35% to 80% of the emulsion, thus the waxes, surfactants, stabilizers and polyvinylalcohol form from 20% to 65% of the emulsion (Abs; col 1, lines 4-11; col 3, lines 55-67; col 4, lines 1-8 and 20-45; col 7, lines 30-65; col 8, lines 3-22).

Wantling discloses water resistant gypsum board comprising a wax emulsion containing, by weight of the emulsion, about 25% to about 50% of a slack wax generally having a melting point from 110 to 140 °F, 1-20% a microcrystalline wax, about 1 to

about 10% of a naphthenic oil, about 0.5% to about 10% of an emulsifier, about 0.05% to about 5% of a dispersing agent and water. The claimed sorbitan fatty acid esters and polyoxyethylene sorbitan fatty acid esters are disclosed. In an example, sorbitan monostearate and polyoxyethylene sorbitan monostearate are each used in an amount of 2.5% by weight of the emulsion (Abs; col 1, line 48 to col 2, line 13; col 3, lines 4-8; col 4, lines 33-39; col 5, lines 14-29, Example 1).

The art of Imai, Manka et al, Song, Wantling and the instant invention is analogous as pertaining to water repellent compositions used in gypsum, gypsum-fiber, paper and fiber containing composites. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the claimed surfactants in the composition of Imai in view of Manka et al and further in view of Song and Wantling as conventional surfactants well known in the art for such compositions.

9. Claims 15-19 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imai in view of Manka et al, as used in the rejection of Claims 1, 2, 4, 12-14 and 26 above, and further in view of Bates et al (5972094) and even further in view of Kerr (3022184).

Imai and Manka et al are used as above. Imai and Manka et al do not disclose using the claimed starches.

Bates et al discloses a paper sizing composition comprising a thermoplastic resin, such as a hydrocarbon resin or amide wax, an anionic surfactant and a starch (Abs; col 3, lines 44-49 and 65-67; col 4, lines 1-3 and 39-46). Suitable surfactants

include condensed salts of naphthalene sulfonic acid that are well known in the art (col 8, lines 47-53). The hydrocarbon resin can be a polyalkylene wax (hydrocarbon wax) (col 6, lines 53-54; col 7, lines 20-27). Suitable starches include unmodified starch, oxidized starch, anionic starch (acid modified), hydroxyethylated starch and cationic starch (col 8, lines 5-23). The starch assists in the dispersal and stability of the aqueous composition (col 7, line 62 to col 8, line 1).

Bates et al does not disclose borate or molybdenum starch complexes.

Kerr discloses forming a complex between starch and a polyborate to give a relatively neutral compound, reduce the drying time of starch containing sizes, and reduce tendency of the sizes to congeal into irreversible gels (col 3, line 13 to col 4, line 18). In an example, the ratio of polyborate to starch is 2:20-25, which is within the claimed range (cols 5-6. Examples 1 and 2).

The art of Imai, Manka et al, Bates et al, Kerr and the instant invention is analogous as pertaining to starch containing compositions used in gypsum, gypsum-fiber, paper and fiber containing composites. Imai teaches that wax emulsions can be used for treating gypsum, paper and fiber containing products. It would have been obvious to one of ordinary skill in the art to use a modified or unmodified starch, or a complex of starch and a polyborate, in the wax composition of Imai in view of Manka et al and further in view of Bates et al and even further in view of Kerr to assist in the stability of the wax composition.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

10. Claims 1, 2, 4, 12-19, 26 and 27 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-7 and 21 of U.S. Patent No. 7473712 in view of Imai. The composition of the patent comprises the same ingredients as the claimed composition with the exceptions that the melting point of the first wax is not claimed and a surfactant is not claimed in the patent. Imai discloses waxes having the claimed melting point as suitable for such compositions. Surfactants are well known in the art as typical components in an emulsion and are also disclosed by Imai in similar compositions. One of ordinary skill in the art would have found it obvious to include the claimed waxes and surfactants in view of Imai.

11. Claims 1-4, 14-19 and 26-27 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-8 and 17 of U.S. Patent No. 7473713 view of Imai. The composition of the patent comprises the same ingredients as the claimed composition with the exceptions that the melting point of the first wax is not claimed and a surfactant is not claimed in the patent. Imai discloses waxes having the claimed melting point as suitable for such compositions. Surfactants are well known in the art as typical components in an emulsion and are also disclosed by Imai in similar compositions. One of ordinary skill in the art would have found it obvious to include the claimed waxes and surfactants in view of Imai.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DENNIS CORDRAY whose telephone number is (571)272-8244. The examiner can normally be reached on M - F, 7:30 -4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dennis Cordray/
Examiner, Art Unit 1791

/Eric Hug/
Primary Examiner, Art Unit 1791